The customer magazine of ThyssenKrupp Steel Europe

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1/2011

Blechexpo 2011 in Stuttgart

Single-source solutions for a wide range of industries

300 million euro investment

Hot strip mills to be modernized

Germany

Wanted: engineers

ThyssenKrupp Steel Europe
Thinking the future of steel

ThyssenKrupp

compact

Issue 35 – 1/2011

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Blechexpo Stuttgart opens its doors from June 6 to 9. This is the largest sheet metal working show in odd-numbered years. As always, ThyssenKrupp Steel Europe and its various divisions will be there. The company will be showing what steel is capable of. This year, we will be displaying our expertise not just in the familiar volume market, but also specifically in highly specialized niche markets. Find out for yourself in Hall 4, Booth 4105.

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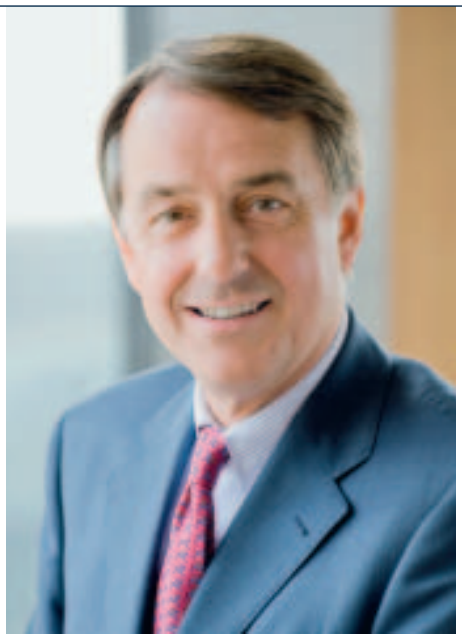


Dear readers, valued customers,

Steel will remain the core business of ThyssenKrupp. This is one of the messages that have been publicized on TV and in the press during recent weeks concerning the reorganization of the ThyssenKrupp Group. The central message is that growth areas will be strengthened specifically, and more will be invested in R&D. Steel Europe will continue to play a significant role as a material supplier, and will strengthen its market position in high-quality and innovative rolled flat steel products with a forward-looking strategy.

All the signs are that 2011 will be a good year for steel. And we may be looking at a growth phase to follow. The World Steel Association is forecasting that the global market supply of rolled steel will increase by 5% this year. That would be equivalent to a crude steel production of nearly 1.5 billion tonnes worldwide. After the painful crisis of 2009, we expect the so-called "super cycle" to continue with respectable growth.

In Europe, the core industries that are key to flat steel sales are currently running at very high capacity. Growth is being driven mainly by the automotive industry, which increased production by 21% in 2010 thanks to good export demand compared with the low level the year before, and started the new year extremely dynamically. General engineering, which is benefiting from increased orders from abroad, and the pipe industry are also showing a clear upwards trend. The steel association, Eurofer, is forecasting that growth in the steel processing industries will continue this year and in the coming year, although at a somewhat lower rate. The expected growth of 3-4% should be helped by the construction industry, which has not been doing so well until now. The upwards trend could be seen clearly at BAU 2011 Munich.

The drivers here are the global trends of the future, namely mobility, energy and urbanization. These will demand the use of sophisticated steel products in coming years – precisely what we have in our portfolio today. As you will be able to see at Blechexpo in Stuttgart this June, our innovative products for industry stand out due to their high levels of quality and innovation. These are factors which apply in all applications, to the benefit of you as the customer – whether you are using our materials to make garage doors, pipelines, furniture parts or wind turbines.

> "The trends of mobility, energy and urbanization demand the use of sophisticated steel products."

I can see the politicians in Brussels creating some problems for Germany industry, and Berlin is also racking up the bar on energy and climate policy. What we say to the politicians is that legislation must not make European industry less competitive. Europe has to show that it is possible to protect the climate without putting growth and prosperity at risk. This means balancing opportunities and risks carefully at all levels of industry, something that can only be done with an intelligent energy mix.

Renewable energy sources like wind and solar power will be leading the way in future, because they cut CO_2 emissions and make us less dependent on imported energy. But we have to understand that developing these new technologies, making them commercially viable and getting them to market will take time. Innovation and customer orientation are and will remain the key factors in our success. And where the range of existing steels is not enough, we and our customers together will develop new grades to make their products more economical, longer-lasting and more sustainable. You will be able to read about this in the current edition.

I hope you enjoy reading it.

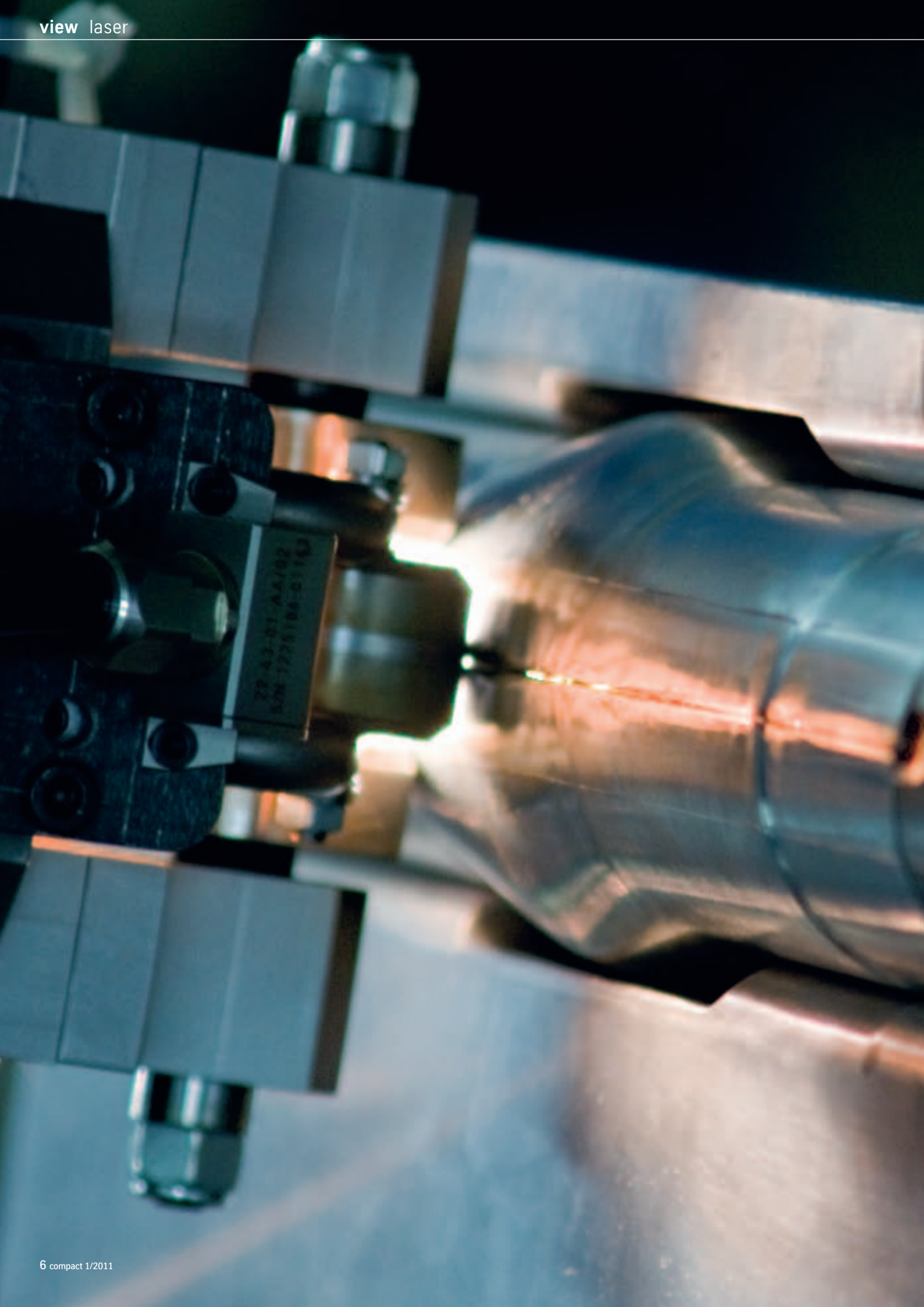
Yours,

Dr. Jost A. Massenberg
Member of the Executive Board responsible for sales
ThyssenKrupp Steel Europe

Phosphate coating under the microscope

To see what a phosphate coating on a cold strip looks like in detail, you need a scanning electron microscope: enlarged 8,000x, the apparently smooth surface of an electrolytically galvanized strip becomes clear to the eye. The rough structure is created by phosphate coating, a common finishing process. First, the annealed cold strip is electrolytically galvanized: the dense and strongly adhesive zinc coating makes it extremely resistant to corrosion. Then comes phosphate coating: this further optimizes the processing and service properties of electrolytically galvanized strip. The phosphate coating might only be a nanometer or so thick, but it gives the strip more protection against corrosion, and reduces the coefficient of friction in the forming process. And the rough surface offers better adhesion for paint. So phosphate-coated electrolytically galvanized strip is an ideal starting material for the automotive industry, where it is used in outer skin and interior applications alike.

Photo: ThyssenKrupp Steel Europe



T³® technology for optimized shock absorber tubes

Lasers for thin welds – the final step in the process of making a shock absorber tube from flat-rolled carbon steel. This is a snapshot from a research project in which ThyssenKrupp Steel Europe and ThyssenKrupp Bilstein Suspension are working together. “In designing a suspension strut for a mid-engine sports car so that the oil it contains does not overheat,” explains Andreas Mai, team leader in developing conventional shock absorber tubes at ThyssenKrupp Bilstein Suspension, “we are calling on the expertise of our colleagues in Duisburg.” Mai and his team delivered a design solution which involves widening the tube at one end, and the experts at ThyssenKrupp Steel Europe developed the production process. “With our company’s T³® technology, we can put the ideas of our colleagues at Ennepetal into production quickly and cost-effectively,” explains Michael Brüggenbrock of Research and Development at ThyssenKrupp Steel Europe. Before the hollow section can be welded, however, a flat blank has to be formed into a split profile in a two-stage process. T³® technology has proven itself, and should be going into production in the fall.

Photo: Rainer Schröer

Blechexpo in Stuttgart
Strong throughout the process chain

Blechexpo, the international sheet metal working show, is held every two years: this year, it will be opening its doors in Stuttgart from June 6 to 9. It is the largest trade show of its kind in odd-numbered years. And, as always, ThyssenKrupp Steel Europe and its various divisions will be there. In Hall 4, Booth 4105, the company will be showing what steel is capable of and also presenting our expertise in niche products.

On its tenth anniversary, Blechexpo has exciting news. The international trade show recently signed up to a partnership of ideas with VDW (Verein Deutscher Werkzeugmaschinenfabriken), the German Machine Tool Builders' Association, strengthening its industry knowledge enormously. "We can now address potential clients amongst both exhibitors and visitors much more effectively, especially abroad. Our aim is to become a benchmark show for the industry internationally," stresses Paul E. Schall, director of P.E. Schall, who is organizing Blechexpo. VDW director Dr. Winfried Schäfer adds, "VDW provides contacts with major non-German players in the market. We know which way the industry is going, both at home and abroad."

In odd-numbered calendar years, Blechexpo is seen as the number one sheet metal processing show in Europe; which also makes it a must in ThyssenKrupp Steel Europe's show calendar. "Blechexpo is the number two show for steel producers and sheet metal processors in the industry in continental Europe," says Rolf-Jürgen Neumann, Head of Strategic Marketing at ThyssenKrupp Steel Europe. The company will be presenting itself in Stuttgart on a 300 m^2 joint booth shared with a number of divisions – from the company's own business units through to subsidiaries and sister companies such as ThyssenKrupp Nirosta and ThyssenKrupp Materials International. Neumann says, "ThyssenKrupp Steel Europe will be presenting a comprehensive portfolio and, with it, our enormous expertise in the whole process chain for sheet metal working." This all-round ability underlines the steel smith's motto for the show: "Single-source solutions for a wide range of industries". (You can read more about this on subsequent pages.)

The partnership of ideas between VDW and Blechexpo is reflected in the communication and marketing of the show with professional flair. What does marketing strategist Neumann think of this new partnership? "I believe strengthening Blechexpo in this way is vital. VDW's input can only benefit exhibitors and visitors." And how does ThyssenKrupp Steel Europe benefit? "To us as suppliers of steel solutions, machine tool manufacturers in the vertical supply chain are important customers, so working together promises more potential visitors from this industry," he explains. "Our contribution to the machines is often not visible, as our products are processed further and completed into machine tools." So, when these manufacturers exhibit their end products, that means real added value as far as ThyssenKrupp Steel Europe is concerned. "Ultimately, the exhibits also show what we can do as suppliers and service providers."

"Sheet Metal meets Business" is the motto of this year's show. And, once again, the exhibition has set itself the goal of presenting all technologies relevant to the cold forming of sheet metal – from handling raw materials to joining sheets, sections and tubes.

On the show's tenth anniversary, its organizers have notched up a new record when it comes to exhibitors. After 957 exhibitors in 2009, Blechexpo 2011 aims to reach the 1,000 mark. Two years ago, a good 700 came from Germany, the rest from abroad. Around 25,000 people visited the show in 2009, 84% of them from Germany, the other 16% mainly from other countries in Europe. Over the years, Blechexpo has shown that it attracts 90% specialist visitors in total, most of them decision-makers. The top three industries which visitors come from, in order, are metalworking/processing (40%), followed closely by machine tools, plant and equipment construction (36%) and automotive and vehicle construction (12%).

The VDW is making a special contribution to mark the new collaboration, devoting its presentation at the press conference opening Blechexpo on June 6 to energy-efficient production solutions. VDW director Schäfer says, "We call our concept 'Blue Competence', covering sustainability and energy efficiency in particular in the machine tool industry. It's not just individual machine tools we aim to optimize, though: rather, we want to work with customers and suppliers to produce holistic solutions to improve processes and end products." That is nothing new in the industry: but the Germans as market leader in machine tools are setting themselves apart positively from their competitors.

Ulrike Wirtz, freelance journalist

www.blechexpo-messe.de/en/blechexpo

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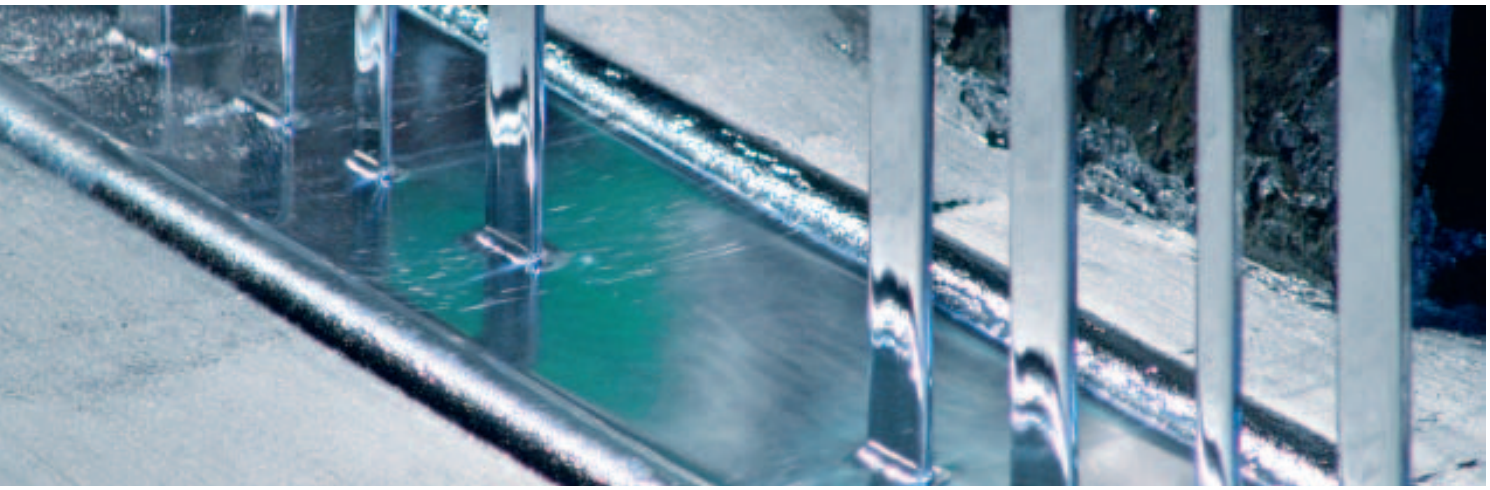
Single-source solutions for a wide range of industries

All-rounder steel serves important niche markets

Living, driving, washing – life today would be unimaginable without modern steels. Their characteristics make them flexible and indispensable in many areas, with permanent further development and innovative solutions meeting ever new challenges.



Narrow strip at Finnentrop: up to twelve rows of varying sizes pass through the galvanizing process.

Whether it's used for saw blades, longitudinal members or washing machines – steel is a versatile, essential part of today's products. And ThyssenKrupp Steel Europe's product range leaves nothing to be desired: hot strip, sheet, coated products in a wide range of grades. Our highly specialized further processing stages from heavy plate and organic-coated strip through narrow to medium-wide strip complete our broad range and are designed very much with an eye to subsequent use. Our product range is extensive and opens up innumerable prospects at a time when products are developing rapidly and diverging.

Finnentrop pushing into niches with narrow strip

Galvanized narrow strip is ideal for niches: roof gutter mountings, lightning conductors, building fittings. The starting materials for these products are produced by ThyssenKrupp Steel Europe's plant at Finnentrop, which has been galvanizing extra-narrow steel for over 30 years. "We specialize in edges," stresses Peter Schmidt, Senior Engineer with Finnentrop's coating team. "They are gently chamfered and galvanized all round." It is precision work, with sophisticated technology behind it. "Before coating our narrow strip, we slit it to precisely the width the customer wants." 'Narrow' in this case means 15-180 mm wide and 1-6 mm thick. "We coat each side with a zinc layer up to 500 g per square meter to provide optimum corrosion protection." They ensure this with cutting-edge zinc discharge system, enabling an even coating thickness and so ensuring optimum forming characteristics. The downstream air-water cooling system cools the steel faster and more selectively, ensuring the zinc adheres optimally. "Finally, passivation can be applied, which makes the strip even more corrosion-resistant." This business strategy dates back to 1974. "Then we started out making lightning conductors and earthing strips," Schmidt remembers. Demand was high, and they extended their product portfolio. "Today, we supply our customers with around 1,500 metric tons of narrow strip a month." And the figure is rising too. They also make rings for wine barrels, up and over doors to protect property, and construction brackets. Narrow strip is used in shelf and pallet making, as well as in the automotive industry and solar energy. "We pack our materials to suit our

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Our Color/Construction Unit's products offer the highest level of added value. Today's coatings give expression to their products, lend them a personal note and ensure top functionality.

customers' wishes, in small batches, rings, bars and coils," says the Senior Engineer.

Quantum leap in coil coating

The coil coating products of our Color/Construction Unit represent the highest level of added value, and hence are closest to end products. Whether in the construction, white goods, media or automotive industries, our Unit's state-of-the-art coatings give expression to products, lend them a personal note and ensure top functionality. "We give steel an afterglow," is how manager in charge Reinhard Täger describes the outstanding feature of PLADUR® Luminous. "This isn't about color or design, but about quantum physics," he explains. "When we coil-coat flat carbon steel, we apply a phosphorescent layer of paint with special pigments that store energy from daylight and artificial light and re-emit it in dark environments." This coating was developed for safety applications: steel emergency exit doors finished in PLADUR® Luminous light the way to safety for hours, even if the power fails. It can guide people on escalators, along walls and under ceilings." The portfolio also includes PLADUR® Antikondensat. "This special paint coating is designed to be used inside, absorbs water from condensation and stores it until it can evaporate again." What really matters is that it prevents condensation droplets forming on the surface, which makes PLADUR® Antikondensat ideal for the undersides of single-shell trapezoidal profiles, among other applications.

Our Color/Construction Unit also has something for the eyes, with PLADUR® Relief: "Color, shine and structure give our steel plate charm and individual aesthetics," says Täger.

http://construction.thyssenkrupp-steel-europe.com/en

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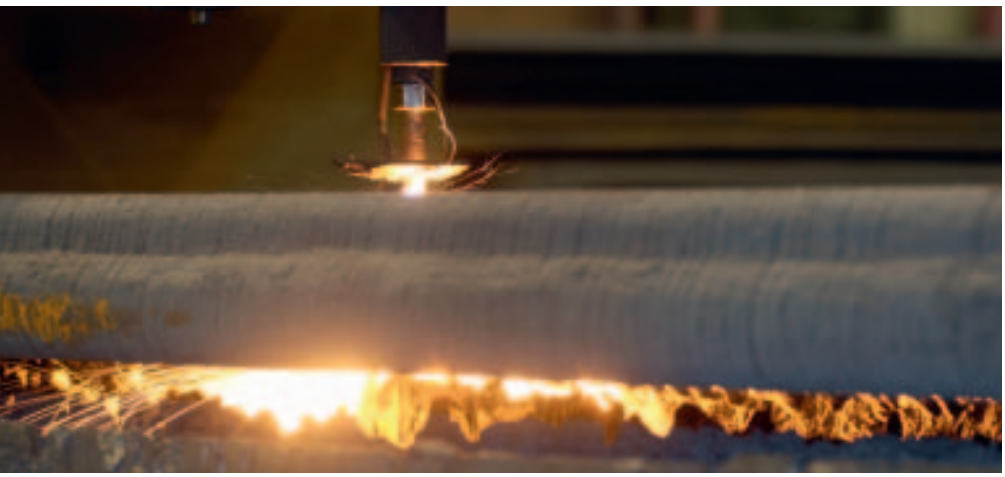

Left Ultra-robust: heavy plate is needed above all where the going gets tough – highly-stressed steel structures for a wide range of applications, such as mobile cranes, construction machinery and commercial vehicles.

Right Ultra-light: Magnesium coils produced in Freiberg weigh just 1.5 metric tons. They are used to make prototype magnesium components.

Heavy plate: Especially for heavy machinery

Heavy plate is needed above all where the going gets tough: highly-stressed steel structures for a wide range of applications like mobile cranes, construction machinery and commercial vehicles. They need to be light and flexible, yet robust and strong. They are also used as safety features in vehicles. "We have specialized in giving our different customers what they need," explains Mario Klatt, domestic sales manager at ThyssenKrupp Steel Europe's Heavy Plate Unit. "Our high-strength special construction steels have long since proved themselves under maximum requirements in terms of low weight and cost-effectiveness. Our wear-resistant steels are used in construction machinery, where they make machinery and equipment long-lasting and so enable plant to be operated economically." For this, the Heavy Plate Unit uses the latest rolling and heat treatment processes. "We also offer customers semi-processed parts through to finished structural components via our worldwide service center network. Indeed, we develop the parts further with them in some cases."

http://plate.thyssenkrupp-steel-europe.com

Lightweight construction with magnesium

In cars, wheelchairs and suitcases, magnesium sheet makes things light and hence absolutely flexible. This material weighs only about a quarter as much as steel, is 35% lighter than aluminum, and its reserves are virtually inexhaustible. Used mostly in castings to date, magnesium is now also available as sheet – and at affordable prices.

"Our magnesium rolling mill in Freiberg can produce strips less than 1 mm thick," explains Dr. Hans-Peter Vogt, director of MgF Magnesium Flachprodukte, a subsidiary of ThyssenKrupp Steel Europe. "We aim to make magnesium strip just 0.5 mm thick." Strip width is 500-700 mm.

www.thyssenkrupp-mgf.com/en

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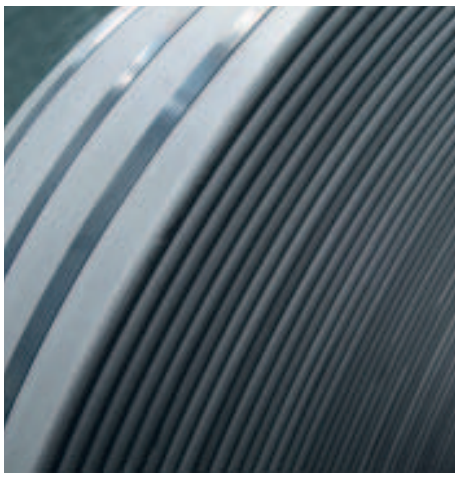

Left Very close thickness tolerances thanks to state-of-the-art production lines. Two two-high and seven four-high stands produce medium-wide strip of the required size

Right Our Steel-Service-Center cuts material precisely to size and delivers it as slit strip or blanks to our customers, who work it to suit their needs.

Hoesch Hohenlimburg specializes in sophisticated medium-wide strip

Medium-wide strip maker Hoesch Hohenlimburg is also dedicated to giving customers what they want. Gear train components, brake pistons, seat covers – this specialist hot-rolled strip supplier in Hagen (Westphalia) stands for decades of production experience. "Our medium-wide strip is highly sophisticated," stresses management spokesman Dr. Jens Overrath. "Our rolling line is constantly being updated and developed further. It is automated and offers ideal conditions for setting close tolerances in terms of strip geometry and mechanical properties."

These product properties benefit the cold rolling, automotive and components industries amongst others. "The outstanding microstructure of our strip steel offers optimum conditions for forming even higher-strength steels." Medium-wide strip is made in widths from 25 to 685 mm and thicknesses between 1.5 and 16 mm from slabs. "When it comes to new projects, we enter into dialog with our partners. We can help them with selecting materials, depending on the requirements involved, develop our materials and help customers with their production processes." Quality and developing special grades are paramount at Hoesch Hohenlimburg.

www.hoesch-hohenlimburg.de

Stahl-Service-Center ensures the right cut

The Stahl-Service-Centers of ThyssenKrupp's Materials Services business area make materials to precisely the dimensions required and supply them to their customers as slit strip or blanks. But being a premium service provider like ThyssenKrupp means more than that: "Delivering just in time is only part of our day-to-day business," says Thomas Wölk of the Business Excellence department of ThyssenKrupp Stahl-Service-Center in Krefeld. "For our demanding customers, we also handle logistics, plan their needs and schedule their calloffs." These are just some examples of how Supply Chain Management can be optimized to the customer's benefit. "We aim, above all, to support our customers with individual services along their value chain, leaving them free to concentrate on their core competences." The ThyssenKrupp Stahl-Service-Center has unique material and service skills. "As well as our many years of processing experience, we can also advise our customers in terms of tailor-made services, offering them a very high level of benefits."

Christiane Hoch-Baumann

www.thyssenkrupp-stahl-service-center.com/en/

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Niches supplement volume business
Close customer relationships, stable markets

Mr. Paffrath, what is behind the motto "Single-source solutions for a wide range of industries" under which ThyssenKrupp Steel Europe will be appearing at this year's Blechexpo trade fair, and what can visitors look forward to in Stuttgart?

The motto suggests a wide range of steel products and know-how, and it is with precisely this aspiration in mind that we aim to present ourselves at Blechexpo and conduct dialogs with our existing and potential customers there. We are addressing a broad industrial spectrum, with the focus on volume business and niche applications. Alongside ThyssenKrupp Steel Europe's Industry and Auto Sales divisions, the Heavy Plate and Color/Construction Units will also be represented on our booth. This means that, together with the Stahl-Service-Center, Nirosta and Materials Services, the ThyssenKrupp Group will be demonstrating the immense diversity of high-quality materials and applications it has on offer in Stuttgart. At the same time, our aim is to maintain close, partnership-based relationships with our customers and stay close to our markets.

Let us first concentrate on ThyssenKrupp Steel Europe. What is the situation with niches as against the volume markets?

There are good reasons for involving ourselves with niche applications. Applications of this type are gaining in importance. They are highly specialized, and are concentrated on very specific applications which put the customers for which they are destined in a strong competitive position. This means that niches are for the most part of a stable nature in terms of the market. The products in question make special requirements on our starting materials, and it is precisely here that our strengths lie. Already today, we are able to offer our customers a diversity of individual specifications, with in some cases extremely demanding requirements in terms of surface and forming behavior.

Let me put that in figures: Our sales volume at Industry Sales currently ranges between five and six million metric tons per year, the majority of which is accounted for by volume business in the B-to-B sector. Our customers are to be found in the areas of cold rolling, service centers, mechanical engineering and pipe and metal packaging manufacture, among others. In some of the sectors we are already active as what is known as a niche-product provider, and this underlines our standing as premium supplier and fulfils our claim to develop comparative competitive advantages via unique selling propositions.

Is the customer and market proximity you just mentioned having a positive effect in this context as well?

Yes, of course. Besides a stable market trend, which ensures continuous earnings, it is the intensive proximity to customers which we appreciate and exploit. First of all, there is the geographical factor. Our share of sales within a radius of 250 kilometers is just short of 60 percent from 35 percent of the customer base. If we expand the radius to 500 kilometers, some 50 percent of the customers are based there and account for 75 percent of our sales. The proximity to our customers gives us optimal flexibility and enables us to assure just-in-time deliveries – and that too ultimately has a positive effect on our mutual cooperation. It serves to foster customer loyalty and, in most cases, makes for win-win situations, in which our customers and we work together on and develop solutions tailored to their specific needs. We meet up frequently with our customers, and have intensive exchanges of experience, views and ideas. This close, partnership-based way of dealing with our customers leads to our becoming involved

Jörg Paffrath has been Head of Sales Industry since the beginning of the year. He puts the focus on niche business as a supplement to volume business, and aims for and values partnership-based relationships with the company's customers. At the same time, he keeps a close eye on the trends and developments in the raw material markets and on European energy and climate policy.

in new developments at a very early stage, in some cases already in the concept phase. It goes without saying that this is of enormous importance for us, since we can then, in good time, incorporate the findings and knowledge thus gained into the development of our flat steel products. In so doing, we enable our customers to gain technological advantages in their products and processes – which in turn puts them in a healthy competitive position. The intensive contact we maintain with our customers has led to our having worked together with many of our customers over generations and built up a sound basis of trust.

Does the close cooperation between supplier and customer make it possible to cope better with market fluctuations and crises?

I am firmly convinced that this is the case, and the figures show us that too. The intensive relationships with our customers enabled us to recover sooner than expected from the drastic slump in 2009. However, we also stick to this principle in times of scarcity and rising prices of raw materials as well, and together will assert ourselves in the market. I am confident that we are on the right track in this respect.

So you're positive about the outlook for the future?

Yes, without any reservations whatsoever. As the pivotal aspect of our economy, and with a broad-based value chain and innovative technologies, the industrial sector has got off to a good start in 2011 and will continue its positive development. That said, it is nevertheless important to ensure the continuing competitiveness of the location factors for steel production and processing. Besides the topic of raw materials, these also include Europe's energy and climate policy with its national and international statutory environment. Now it's up to the political decision makers, because global competition requires global, standardized framework conditions – at least in Europe.

The interview was conducted by Christiane Hoch-Baumann and Rolf-Jürgen Neumann

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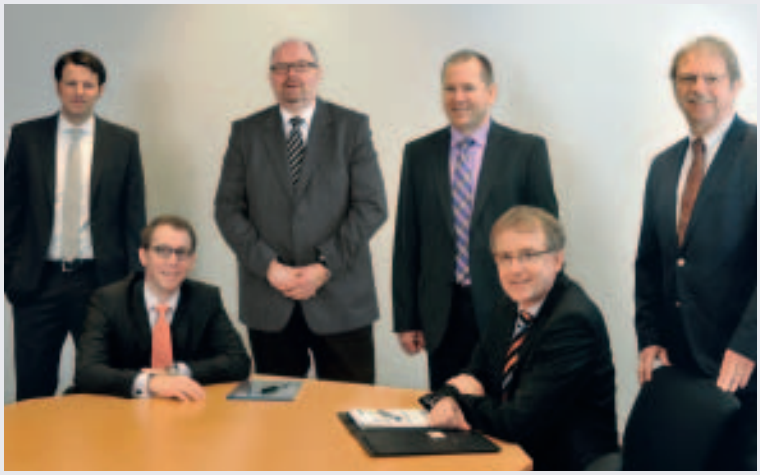

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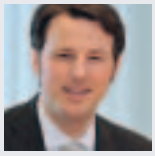

Pipe Manufacturers, Exports, Specialized Products

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Germany, center of industry
"We aim to remain competitive"

The industrial sector played a crucial role in Germany's economic recovery in 2010. And this year too, the manufacturing industry has got off to a good start, with companies registering a healthy business situation and taking a positive view in terms of their business prospects. Secretary of State Jochen Homann talks to compact about the current situation, and provides an outlook on how Germany as an industrial center will continue to assert itself against the background of an ambitious European energy policy and fluctuating raw material costs.

What was the secret behind the success of German industry in the year of upswing 2010?

German industry was already well positioned before the crisis, and was able to follow on from that last year. Its strong points and advantages include advanced technologies and products, as well as its high level of productivity. Other factors contributing towards its international competitiveness are cost advantages created by increasingly global value chains, a moderate wage policy, and the possibility of retaining qualified personnel in hard times via instruments such as short-time working. However, a further contributory factor in this context lies in the structure of our industry – from global players such as ThyssenKrupp to healthy and innovative small and medium-sized companies, right through to smaller, specialized companies.

Let us concentrate first on the global players. How do you see the German steel industry in terms of its positioning?

With a crude steel output of 44 million metric tons, Germany was the world's seventh-biggest steel producer last year. This means that the German steel industry is still playing a key role in international comparison. The particular strength of the German companies is attributable to highly successful steel research, resulting in products that head the technological field, a comprehensive national value chain and, not least, a highly qualified and motivated workforce. By means of various different strategies our companies have responded successfully to the structural changes in the international steel market. Among these changes are mergers on the domestic front and a diversity of foreign activities aimed at opening up new markets and building up production lines there. As regards ThyssenKrupp, it is extremely pleasing to see that, besides the new plants in Brazil and the USA, the company is continuing to invest in its German facilities, above all in Duisburg.

The steel industry complains that regulation, energy costs and levies on CO_2 emissions are placing limits on its prospects for the future. It talks of added costs of up to a billion euros in the coming years. What is the Federal Ministry of Economics and Technology's assessment of these challenges?

I am in principle an advocate of emissions trading, and see it as a sensible and sound instrument if applied rationally. The targets set for emissions trading by the EU Commission for the time after 2012 are ambitious, and will be sending out an unambiguous CO_2 price signal. The European steel industry is affected to a particularly high degree, and how this will impact its competitiveness is an issue we are discussing with people in the industry, among others. The federal ministry is all for aiming to ensure that our industry retains its competitiveness, above all where the steel industry and other energy-intensive manufacturing enterprises are concerned.
Where the steel is produced is an important factor. Production operations relocated to

non-European countries and substituted by imports not only serve to destroy competitive jobs in Germany. This form of relocation is also of no positive help where global climate protection is concerned, because our steelworks are among the world's most efficient in this context. Indeed, the steel industry is already now playing, for example, a part in the reduction of greenhouse gases by means of voluntary self-imposed commitments. In doing so it is acting farsightedly instead of simply waiting to see what comes out of Brussels. The upshot is that the German steel industry is extremely well positioned technologically in European comparison, due to its production processes being oriented to energy efficiency and climate protection. Against this background, I am confident that it can continue to operate on an economically sound basis in Germany in the future as well.

Nevertheless, the industry says that no blast furnace anywhere in the world will be able to comply with the benchmark values for specific CO_2 emissions as proposed to take effect as of 2013.

The Federal Ministry of Economics and Technology has been very active in Brussels in the interests of German industry, especially with the setting of realistic benchmarks in mind. That said, however, at the European level we are having to work with 26 other member states, as well as with the EU Commission, towards reaching an agreement. Germany finds itself in a special situation: While we are regarded as the EU's model industrial country, there are nevertheless countries that react less sensitively to the possible impacts of ambitious climate policy goals. It is often the case that these countries would like to press for even more stringent standards, since certain sectors of industry there are of small or no significance anymore. Given these difficult framework conditions, we have in fact achieved a quite acceptable result.

Apart from that, please allow me to point out that the CO_2 cost factor is not the sole determining aspect for industrial production; the labor market has to be taken into account

Jochen Homann has been Permanent Secretary of State at the Federal Ministry of Economics and Technology (BMWi) since February 2008. His sphere of responsibilities includes industrial, energy and technology policy. He already worked there from 1982 to 1991, then again from 2001, most recently as head of the Economic Policy department. From 1991 to 2001 he headed the Policy Principles Directorate in the Federal Chancellery's Economic and Financial Policy Department.

High-quality flat steel is manufactured at the ThyssenKrupp Steel Europe plant in Duisburg for the world market.

too, as well as the legally sound and business-friendly environment and the infrastructural quality of a production location.

On the topic of raw material supply: Last year the steel industry found itself having to cope with, among other things, exorbitantly rising iron ore prices. What, in your opinion, can the policy makers do in such a situation?

We at the Federal Ministry of Economics and Technology regard the raw material supply as a high-priority issue. This is also reflected in the federal government's raw materials strategy adopted in October 2010, and in the setting up of the German Raw Materials Agency. Apart from that, an interministerial committee on raw materials has been in place since 2007, the meetings of which are also attended by the BDI (Federation of German Industries). We also take an active part in international committees and conduct bilateral dialog with our trading partners in the interests of eliminating distortions in trade and competition in the raw material markets. As we see it, it is important that the economy moves actively, because the securing of raw materials is and remains its responsibility. However, we are ready to support investments via the Federal Ministry of Economics and Technology's guarantee instrument.

What are the tasks facing the Federal Ministry of Economics and Technology in order to ensure an even better positioning of Germany as an industrial center?

We have to ensure fair competitive conditions, and thus a "level playing field". We have to shape the framework conditions for economic action in such a way as to enable the companies to operate here in Germany efficiently and productively. At present, we are concerning ourselves with topics such as, for example, emissions trading and associated compensatory mechanisms, tax issues and the promotion of technology. The new technology offensive launched in late January is aimed at improving the framework conditions and application-oriented research, in particular in the area of small to medium-sized companies. The topic of planning and investment security is certainly an important one as well, and I believe that industry is entitled to foreseeable framework conditions and statutory regulations. We also keep a very close eye on the developments in the labor market, especially as regards skilled and specialized manpower.

At the federal ministry you are responsible for industry, technology and energy – an exciting range of topics …

Yes, and also one from which the solutions for the future development of Germany as an industrial and business location come. This becomes clear where the so-called "green markets" are concerned, in whose development these three areas of activity are playing a key role. Germany's industrial sector will do well to remain at the head of the field and competitive in the global race to capture these markets.

Germany is no longer the "sick man of Europe", so you are probably enjoying your job all the more …

Yes, that's true. We're often asked, "How do you do that?", and that is certainly not the worst way to start an interview.

The interview was conducted by Dr. Bettina Wiess, economics journalist

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NewsFlash

Second blast furnace in Brazil
Blast furnace 2 at the ThyssenKrupp CSA Siderúrgica do Atlântico steel mill in Brazil was fired up on schedule and without problems in late December last year – just short of five months after blast furnace 1, which is now producing over 6,500 metric tons of pig iron per day, close to its full capacity. "I expect the ramp-up of our second blast furnace to be just as successful, and that next fiscal year the plant will be able to operate at its full capacity," says Edwin Eichler, ThyssenKrupp Steel Europe's CEO and member of ThyssenKrupp AG's Executive Board. "This further milestone in our forward strategy will enable us to reach our objective of generating a profit in the Steel Americas Business Area in 2012/2013." The startup phase for blast furnace 2 was completed after only two days, and pig iron is now being processed into slabs there as well.

www.thyssenkrupp-steel-europe.com/csa/en

New filtration facility cuts particulate emissions
ThyssenKrupp Steel Europe is building an additional filtration facility for dedusting its sinter plants. The 30 million euro investment will make for a significant reduction in particulate emissions at the Duisburg location. To put this in figures: The new filtration facility will be reducing the environmental burden by 450 metric tons of particulate matter per year. It is being built on an area of around 650 m^2, and the foundation work has already been completed. Work on the construction of the steel framework for the 32-meter high building is now in progress and scheduled for completion in October. The investment is part of a comprehensive filtration plan for the sinter belts.

Love Parade 2010: Memorial
ThyssenKrupp Steel Europe is donating a steel memorial in commemoration of the 21 victims of the Love Parade disaster almost one year ago. The memorial is to be erected shortly on the east side of the tunnel on Karl-Lehr-Strasse in Duisburg. The "condolence march donation" initiative raised around 26,000 euros for the plinth and sculpture, and ThyssenKrupp Steel Europe offered to realize, free of charge, the steel structure designed by Duisburg artist Gerhard Losemann and selected by a panel of judges. A team comprised of instructors and apprentices from the steel manufacturer will be completing the sculpture within the next few weeks.

Heavy plate aiming for success in India
India is a growth market – and ThyssenKrupp Steel Europe's Heavy Plate Unit is in on the action, making good use of the opportunity to appear at the new BC India trade show in Mumbai at the beginning of February. This new event is focused on mechanical engineering for the areas of construction materials, mining and construction vehicles and construction equipment for the Indian subcontinent and its neighbors. Early February saw the world market leaders and representatives from the mechanical engineering sector come together at the Bandra Kurla Complex in Mumbai. Taking place every two years and lasting four days, BC India provides a global platform. "Developing the Indian market is one of our strategic goals," says Heavy Plate Sales Manager Roland Riesbeck. "By participating in the show we are showing market presence, which we aim to increase further in the future." The path has already been laid: "Together with our partner Union Stahl we have established a regional sales channel, namely UnionSteel Associates in Mumbai, to represent our sales interests in India."

http://plate.thyssenkrupp-steel-europe.com

Impressed by German culture
November 2010 saw staff from the USA pay a visit to ThyssenKrupp Steel Europe's location in Duisburg. The purpose behind the trip was to enable an in-depth exchange of experience, views and ideas with their German colleagues. The American experts from the spheres of sales and technical customer support had six days to get to know the steel production operations in Duisburg as well as the broad-based R&D activities. The guests from overseas were highly impressed by the company, the German culture, and what the federal state of North Rhine-Westphalia otherwise has to offer – and are now looking to successfully put their newly acquired knowledge into practice in Alabama.

www.thyssenkruppsteelusa.com

ThyssenKrupp Electrical Steel
A change took place in the management of ThyssenKrupp Italia with effect as of April 1, 2011, with Davide Ferri, commercial manager since 1999, succeeding Volker Kamen who had successfully headed the company over many years. Mr. Kamen has relocated from Italy to Germany, where he is now the new sales manager for non grain oriented electrical steel in Bochum. He took over from Günter Topp, who has now taken on new duties in ThyssenKrupp Steel Europe's Industry Sales division.

www.tkes.com

Award for health management
ThyssenKrupp Steel Europe has been honored with the Corporate Health Award 2010 in the "Heavy Industry and Engineering" category. The explanation: "The company demonstrates exemplary commitment to the health and performance capabilities of its employees and sets nationwide standards in Germany." The Corporate Health Award is a joint initiative involving the German business and finance newspaper "Handelsblatt", TÜV SÜD Life Service and EuPD Research with the support of health insurer Techniker Krankenkasse. Under the patronage of the German Ministry of Labor and Social Affairs and the New Quality of Work Initiative(INQA), the award is given in eight sector and three special categories in recognition of Germany's healthiest companies. Over 2000 mainly large corporations entered in 2010, including numerous companies listed on the DAX 30 index.

www.corporate-health-award.de

Top quality: hot strip strategy
300 million euro investment

"We are constantly improving, also in terms of quality." To Executive Board member Dr. Ulrich Jaroni, ThyssenKrupp Steel Europe's current hot strip investment program is a clear commitment to being technology leader for flat carbon steel. The company is investing around 300 million euros in its hot strip mills.

The modernization focuses on hot strip mills 1 and 2 in Duisburg and hot strip mill 3 in Bochum. It is there that ThyssenKrupp Steel Europe makes mainly high-strength lightweight steels for automotive production, starting materials for tinplate and steels for oil and natural gas pipelines. They also make starting material for electrical steel, as used in wind farms or hybrid car engines, for example. With materials like this, precision dimensions and precision, carefully controlled properties along the whole length of the strip are particularly important.

The program to modernize hot strip mill 1 therefore includes systems for profile, contour and level control. The strip cooling system is also being replaced, because the cooling process has a major influence on technical properties such as strength and formability. A new accelerated cooling system is currently being installed in hot strip mill 2. One of ThyssenKrupp Steel Europe's aims here is to expand its ranges of high-strength steels for oil and natural gas pipelines. Hot strip mill 3 in Bochum will also be equipped with a new cooling line amongst other things, and rolling equipment for even more precise hot strip dimensions. The hot strip strategy means improved performance in high-end products, which will also protect jobs in the Rhine-Ruhr region. Jaroni says, "We will only succeed in Germany long-term if we offer top quality."

Bernd Overmaat

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BAU 2011 in Munich
Show enthralls the public

Europe's leading trade show for architecture, materials and systems in mid-January was more popular with industry experts than ever.

The visitors flooded in, ensuring BAU 2011 was a record-breaker and underpinning its position as the world's leading show in the industry. Over six days, around 240,000 visitors streamed into Munich's new exhibition center – up around 12% on the previous event. Of these, architects and planners accounted for 22%. Nearly 60,000 visitors were from abroad. The main theme was sustainable building. In line with this, ThyssenKrupp Steel Europe presented innovative, intelligent structural elements and the latest surface coatings under the motto "Steel goes green". For the first time here, the sustainability of ThyssenKrupp Steel Europe's products was made internationally transparent: The Environmental Product Declaration (EPD) now applies to the whole range of single-shell components and sandwich elements of organic-coated steel. From facades to walls and roofs – all demonstrably and comprehensibly green.

An EPD covers a product's entire life cycle: all phases from extracting raw materials through to recycling are examined to see how they impact the environment. Health risks are also checked alongside how manufacturing and use affect the climate, air, water and soil. This is why ThyssenKrupp Steel Europe uses both rigid foams and mineral wools not only in sandwich components but also in packaging and transport.

It was also shown what can be done when it comes to functional surfaces: the Luminous coating from the PLADUR® series conserves and re-emits light, while its counterpart Antikondensat absorbs water from condensation. Both offer users tangible added value. "Customers, architects and construction engineers were very pleased with us," says Rolf-Jürgen Neumann, head of Strategic Marketing at ThyssenKrupp Steel Europe, with pleasure. "We gave them many ideas relating to our material, which is becoming noticeably more important in the construction industry, not least because increasingly stringent environmental requirements make sustainable building with steel possible."

Christiane Hoch-Baumann

http://www.bau-muenchen.com/en

The top topic at BAU 2011 was sustainable building. ThyssenKrupp Steel Europe presented innovative, intelligent structural elements and latest surface coatings under the motto "Steel goes green".

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ThyssenKrupp Steel USA
Customers get to see behind the scenes

A special customer event in the USA generated a positive response in North America. In mid-March, several hundred business partners and potential automotive and industrial customers were given a first-hand introduction to the new plant opened by ThyssenKrupp Steel USA and ThyssenKrupp Stainless USA in Calvert, Alabama.

This event offered the guests an interesting program, starting with a presentation of the Group's 200-year-old philosophy and the German understanding of customer relations, which ThyssenKrupp has been practicing successfully for so long. Then our visitors were able to see our state-of-the-art equipment, the lean, efficient production flow and the optimized working processes for themselves. A wealth of information was provided on the production equipment, and the guests also visited the port facilities, where up to 3 million metric tons of slabs will be arriving to be processed in future. The visitors were shown how the slabs are rolled on the high-tech hot and cold rolling mills.

The program also included a visit to the new Erich Heine training center, named after the director who lost his life in an air crash in 2009. This training facility will take over basic and further training on-site and so provide ideally qualified specialists and service staff.

The guests were very impressed by the new production site at Calvert, as interest and demand for high-grade materials and flat-rolled steel products is increasing steadily in North America too – which is precisely why ThyssenKrupp built this new plant in Alabama.

Daria Szygalski

Left Several hundred guests visited ThyssenKrupp USA's new plant with steel processing highlights such as the hot and cold rolling mills.

Right From its Alabama base, ThyssenKrupp USA aims primarily to supply the major markets in the USA, Canada and Mexico with its high-grade steel products.

Top quality heavy plate
Precision is the benchmark

Our Heavy Plate Unit supplies absolutely flat, stress-free plate, especially in very low material thicknesses from just 3 mm. It is made possible by the precision leveler from Austrian plant maker Andritz Sundwig.

As processes and applications become ever more demanding, the bar for carbon steels is being set increasingly higher. ThyssenKrupp Steel Europe is once again going one step further: Its state-of-the-art precision leveler helps produce heavy plate in even higher quality.

Special structural steels are used wherever the going gets tough. For example, wear-resistant heavy plate is used in construction machinery and recycling applications. Highly-stressed shears, excavator components and extremely long-life baffle plates require extremely hard-wearing materials. Users know that the stronger and more wear-resistant their components, the longer their equipment will last. Repairs, on the other hand, cost time and money.

With our new state-of-the-art precision leveler, ThyssenKrupp Steel Europe is meeting this clear customer requirement: made by Austrian plant maker Andritz Sundwig, this machine guarantees absolutely flat, stress-free plate, especially with very low thicknesses down to 3 mm. It can handle thicknesses up to 60 mm with yield strengths up to 1,800 megapascals (MPa).

Irregularities can lead to problems during further processing, especially because special structural steels place very high requirements on processing equipment. In an extreme case, stresses in the material can even cause damage to these expensive machines. If the material is 100% predictable, production runs smoothly and the products themselves are that bit more reliable.

For this reason, steel is leveled during production. Production manager Peter Kruchten of ThyssenKrupp Steel Europe's Heavy Plate Unit explains the background, "During hot rolling, even the most modern plant cannot avoid flatness defects and inherent stresses

Facts and figures

Material thicknesses:	3–60 mm
Material widths:	700–3,800 mm
Plate lengths:	4,000–16,500 mm
Tensile strengths	up to 2,000 MPa
Material temperatures	up to 700 °C
Output:	144,000 metric tons p.a.
Leveling force:	up to 60,000 kN

in thin quenched plate, because of the considerable amount of forming work involved in turning slabs into plate, and the cooling. That makes leveling and the simultaneous reduction of inherent stress essential. And we can now do that better than ever."

The new leveler is state of the art, with many customized innovations. Jürgen Epp of Andritz Sundwig explains: "Our new precision leveler is of block design – with a lower section which supports the lower rolling level, and upper section to match. Both levels are fitted with worm drives so they can be aligned spherically. The benefit of this design is that our unit can absorb enormous leveling forces of up to 60,000 kilonewtons (kN)."

Another extra is the patented module replacement system, which simplifies changing the number of leveling rollers and their diameters – on this machine it can be done in just 25 minutes. During the leveling process, the data required to set the machine up, such as thickness, width and tensile strength, are entered individually and set automatically via four adjustment motors. There is another highlight too: this machine can learn. Its control system monitors and analyzes the leveling process and uses that experience in subsequent processes: in other words, it constantly optimizes itself. This new unit has been in use at the Heavy Plate Unit in Duisburg-Hüttenheim since September 2010. It is a major component of an innovation project which involves total investment of around 41 million euros. "A long-term commitment," says Peter Kruchten. Today, around 60% of the quenching volume is processed on this high-tech unit – XAR® wear steels as well as N-A-XTRA® and XABO® ultrahigh-strength steels. And Peter Kruchten is more than satisfied: "Initial experience shows that the flatness tolerances achieved are even better than required." Good for the customer, good for growth: "We can look forward to demand for our high-quality, water-quenched plate increasing steadily."

Wolfgang Kessler, freelance journalist

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Left Bilstein and ThyssenKrupp Steel Europe are joined in a long-standing partnership which has grown steadily since the cold rolling company was founded. The Duisburg steel maker is a major supplier today, with around 100,000 metric tons of hot strip a year.

Right Bilstein has been in Hohenlimburg since it was founded in 1911, and at its Im Weinhof address since 1921. In designing its production shops a few years ago, the company used ThyssenKrupp Steel Europe's **Reflections**One® color range designed by Friedrich Ernst von Garnier.

Bilstein writes a chapter in industrial history

A hundred years' experience with cold strip

Bilstein is one of the leading cold strip producers in Europe. This family firm has been relying on ThyssenKrupp Steel Europe's materials and expertise since it opened.

100 years of Bilstein – no more and no less. This cold strip specialist stands for top quality, technological capabilities and all-round reliability – that is shown by the company's history, and also reflected in its corporate culture today. "Because it's only through looking far ahead as a business and being interested in innovations that we've been able to enjoy success over the years," explains Dr. Bernhard Gräwe, the Bilstein group's Commercial Director.

Fritz Bilstein founded the Bilstein company on the "Hammacher" between Hohenlimburg and Hagen in 1911. A great believer in technology, he dealt with hot strip from the start, which he sourced from one of ThyssenKrupp Steel Europe's predecessors – to date around 2.3 million metric tons. His production and storage facilities were an old dance hall. His brother Heinrich joined him shortly afterwards. Together, they were a great success: By 1921, the family firm already needed more space. The brothers bought a 34,000 m^2 site at Im Weinhof in Hohenlimburg, right on the River Lenne. "This decision showed they were both courageous and far-sighted," says Gräwe. One hundred years later, Bilstein's production and offices are still at Im Weinhof – although the site has grown quite considerably, and production now uses the latest computerized systems. "We are investing constantly and extensively in our production," says Gerald Zwickel, Technical Director of Europe's leading cold strip maker. The four-stand tandem cold rolling line was modernized recently. In 1912, Fritz Bilstein sold around 250 metric tons; today, the company has around 400 production staff and produces more than 400,000 tons a year in three shifts. While the founder could only handle strips 220 mm wide in 1911, today they are rolling strips up to 670 mm wide – with very close tolerances and high reproducibility. Micro-alloyed steel has a yield strength of between 300 and 1,200 megapascals. These top products are bought mainly by leading companies in the international automotive components industry. Just as in 1911, this medium-sized firm also relies on working in partnership with today's ThyssenKrupp Steel Europe. "We need highly-specialized flat products," says Frank Renfordt, hot strip purchasing manager at Bilstein, "and Duisburg produces excellent starting materials." The steel maker supplies Hohenlimburg with 100,000 metric tons a year. "We supply mild, micro-alloyed and carbon steels," explains Dr. Andreas Basteck, Technical Customer Adviser in Industry Sales at ThyssenKrupp Steel Europe. And the company's expertise is highly appreciated in Hohenlimburg: "We have designed a number of new materials together," says Thomas Thülig, head of materials technology at Hohenlimburg, describing the results of this very open partnership. "We've already written a chapter of history with ThyssenKrupp Steel Europe," Zwickel adds, "and its activities in the USA and Brazil mean more growth opportunities for us."

Even more synergies come from other companies and equity interests of the Bilstein group in Germany and worldwide. They include Hugo Vogelsang and C. Vogelsang in Hohenlimburg, KWW in the Czech Republic and Shearline Steel Strip in the UK, equity interests in Italy (INAC) and Brazil (ARMCO DO BRASIL) and trading companies in the USA and China. Altogether, the group has 1,300 staff, produces over 550,000 tons a

year, and had sales of more than 500 million euros in the last fiscal year, making it one of the world's largest suppliers of cold rolled products.

Bilstein may be old, but it isn't showing any signs of ageing. On the contrary, the company is bursting with dynamism and commitment to innovation at Im Weinhof. "We will grow," says Zwickel. In size, technology and market share. The Federal Government's energy policy is the only thing clouding his vision of the future: "The strict requirements could put industrial production in Germany at risk." But he's sure Bilstein will live to see its 150th birthday. "There have always been challenges, and we've always met them," he concludes.

Daria Szygalski

www.bilstein-kaltband.de

Top Bilstein replaced the four-stand tandem cold rolling line recently. Hohenlimburg places great emphasis on technology, so the cold roller is planning more modernization and new builds.

Bottom From left: Gerald Zwickel, technical director at Bilstein, Thomas Thülig, head of materials technology at Bilstein, Frank Renfordt, head of hot strip purchasing at Bilstein, and Dr. Andreas Basteck, Technical Customer Adviser for Industy Sales at ThyssenKrupp Steel Europe talk about supply volumes, optimizing and developing new highly specialized flat steel products.

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Bette makes bathing, showering and washing an experience

Enameled steel for quality and design in the bathroom

The Bettefloor walk-in shower is a sales hit: not only does it look great, it also scores in terms of cleanliness. Bacteria and germs have no chance on the inorganic material.

The Bette company specializes in making bathtubs, shower trays and washbasins in high-end enameled steel. Its products use natural raw materials like glass and water, including steel from ThyssenKrupp Steel Europe.

An almost endless range of models, prize-winning design, 30 year product warranty – that's what Bette has stood for over the decades. "Our philosophy includes uncompromising demands on aesthetics and quality," says managing partner Fritz-Wilhelm Pahl. "For this, we have unique forming and glazing techniques." Bette has 300 production staff at its 70,000 m^2 site at Delbrück.

Heinrich Bette and his son-in-law, Günther Schlichtherle, founded the company in 1952. They started out making agricultural products in sheet metal and enamel. In 1975, the management brought Pahl from Munich to Delbrück, initially as a consultant. He took over as Bette's manager in the same year.

In terms of core competences and tradition, Fritz-Wilhelm Pahl has developed the company constantly. For him, the unique selling point is high-end bath tubs made from enameled steel. He added shower trays to the product range later, plus washbasins a few years ago. "The professional expertise of our staff has been our capital from the start," he declares. Bette converted a conventional press into a high-tech forming unit and made tubs and trays using its own special technology. Today, the company has three highly-flexible automated production lines, which can switch models many times a day, making up to 700,000 tubs and trays a year. "We were the first to use an IF steel and enamel it," stresses Pahl. Today, he still relies on this grade, which ThyssenKrupp Steel Europe introduced to him. It can be used to realize precision radii. The Delbrück company has also developed a special wet-in-wet steel finishing process which involves applying an ultra-thin glaze coating to the steel, making the surface scratch-resistant, resistant to knocks, smooth and brilliant.

Bette is constantly developing, not just its technical skills but its products too. Marketing experts and designers present their ideas, engineers put them into practice. "Our tubs, trays and washbasins are based on ideas from the market, and from talking with our customers," explains Pahl. They noticed in Delbrück as far back as 30 years ago that shower trays were getting shallower and shallower, for example. "Gradually, we developed the walk-in shower. Bettefloor is still unique to this day." Delbrück's products are in demand worldwide. With 40% of its products going for export, the company delivers mainly to Europe and South-East Asia. Many of its products have won the Red Dot Design Award or Steel Innovation Prize. Customers also value their wide range of products: More than 600 models in over 1,000 colors make for individual design. The many different shapes mean the steel has to be constantly developed further, which is why Bette not only takes around 8,000 metric tons of steel a year from ThyssenKrupp Steel Europe, but also relies on the steelmaker's expertise. "We appreciate the fact that our partner is on the same wavelength," says Pahl, describing the partnership with their number one supplier from Duisburg. "It makes talking about production challenges and the associated material requirements much easier." Dr. Roman Borovikov, Technical Customer Adviser at ThyssenKrupp Steel Europe's Industry Sales unit adds: "Through working together closely as partners, we have developed two new grades of steel in the last six years alone with the characteristics we wanted, tested them under operating conditions and put them into volume production." That enabled Bette to produce new, advanced shapes and provide the high quality expected from the brand.

Bette's strategy is successful – sales in the last fiscal year were 65 million euros. Fritz-Wilhelm Pahl is retiring as managing director at the end of next year, but his son Thilo Constantin Pahl is ready to take over.

Daria Szygalski

www.bette.de

Left Fritz-Wilhelm Pahl (right), managing director of Bette, and Dr. Roman Borovikov, Technical Customer Adviser, Industry Sales, at ThyssenKrupp Steel Europe, talk about not just supplying steel but also about constantly developing the grades.

Right The family company has been in Delbrück since it was founded. As its business grew, it needed more space in 1977, and moved its production and offices from the town center to the outskirts.

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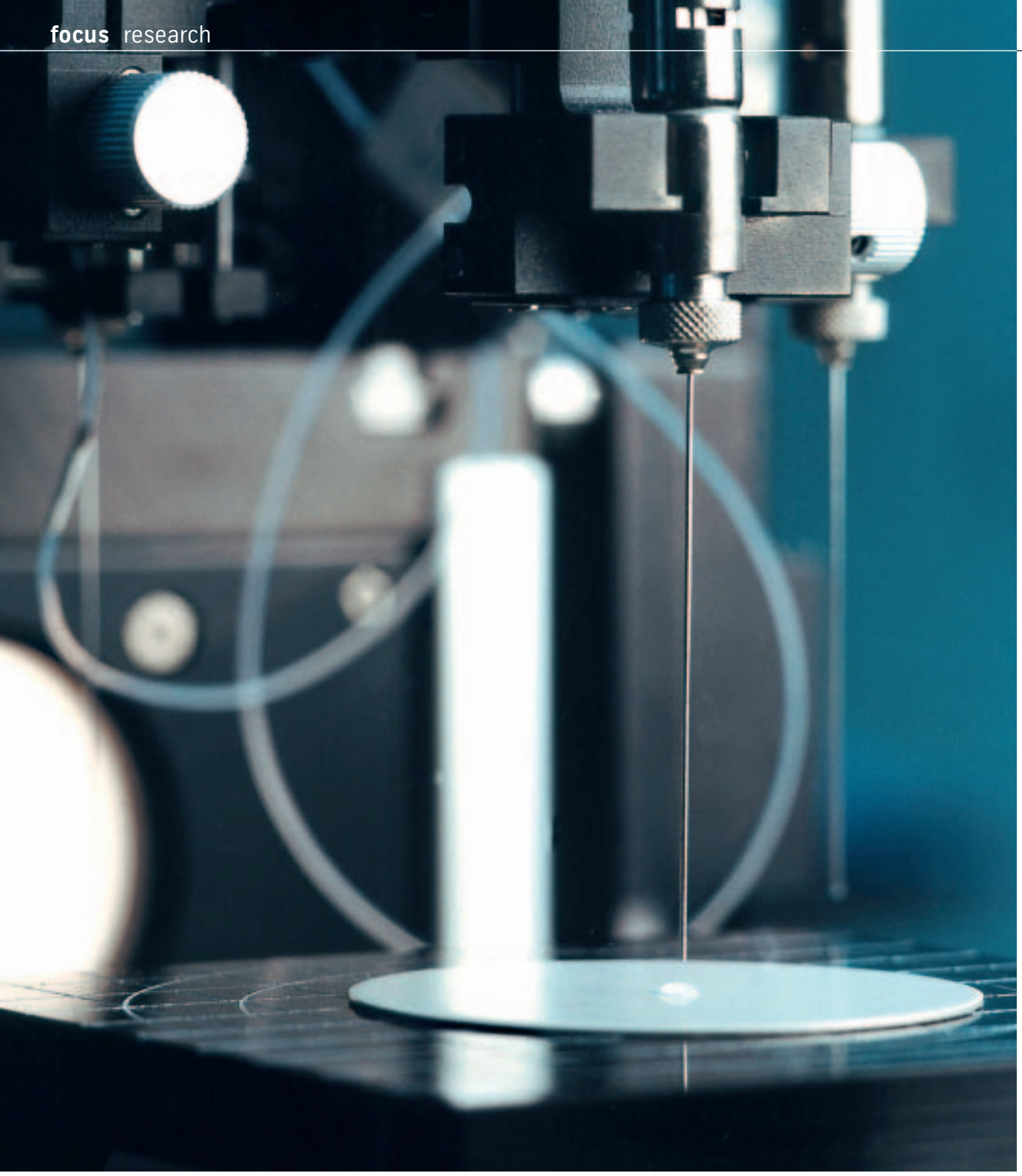

From atoms to materials
ICAMS develops materials by computer

Only founded in 2008, but already a leading think tank today: The Interdisciplinary Center for Advanced Materials Simulation (ICAMS) at the Ruhr University Bochum is one of the leaders in international materials research.

There are only two other institutes like ICAMS in the world, one in Japan, the other in the USA. What researchers at these establishments are involved in is one of the most complex scientific tasks of all, but also one of the key technologies of the future. "Designed materials", materials designed on the drawing board so to speak, are the dream of many materials engineers; and ICAMS has taken a major step towards this dream, through simulating and modeling materials on computer.

Around 70% of all technical innovations by Western industrialized nations depend directly or indirectly on the properties of the materials used. Materials have become an outstanding business factor for Germany. Vehicle construction, information and communication technologies, chemicals, engineering, metal production and processing as well as plastics production are industries that rely on today's materials as the basis for product and process innovations.

In Germany, these industries account for sales of around one trillion euros annually, and employ nearly five million people without including tertiary suppliers. Reason enough for Bayer MaterialScience and Bayer Technology Services, Salzgitter Mannesmann Research, Bosch and Benteler to be involved in funding the Institute under ThyssenKrupp's leadership. The Federal State of North Rhine-Westphalia is also providing funds. Developers from ThyssenKrupp Steel Europe work closely with the scientists at ICAMS.

Simulating materials on the computer is based on quantum mechanics: These are the laws of nature that can be used to calculate the properties of the chemical bonds between atoms. Working on this basis, materials can be built up atom by atom on the computer to some extent. Then it is possible to work out what the structures of these materials will look like at micrometer level, and finally to use that microstructure to say how they will behave at macroscopic level – the behavior of the material in reality, as it were.

What ICAMS is specifically studying, simulating and predicting includes how atoms in individual crystals move when pressure is applied to those crystals. This helps in the understanding of how steel deforms, for example, and above all what different roles the various structural components play here. Another example is the diffusion of hydrogen in iron. ICAMS can simulate the different positions of hydrogen atoms in the crystal lattice and record what the energy levels are in each position. From the results, it is possible to work out how the production process should be controlled to avoid hydrogen being released inside the material. ICAMS can also simulate the coating of steel, thereby allowing predictions to be made about how rough a steel surface needs to be for a given paint to adhere best.

More precise forecasts, less trial and error: that sums up the work carried out at ICAMS. The ability to narrow down the range of possibilities to the most promising variants from the outset through modeling and simulation saves time and money on measuring, experimenting, tests and trials. ICAMS helps make the right choice from the many options available as quickly as possible, which is essential for bringing new and better materials to market faster.

Bernd Overmaat

www.icams.ruhr-uni-bochum.de

Left Lotus effect surface testing at ThyssenKrupp Steel Europe. At ICAMS, such tests can be simulated on computer.

Right 1,232 processor cores and nearly 4 terabytes of RAM: it is on these parallel computers that ICAMS runs its complex materials simulations.

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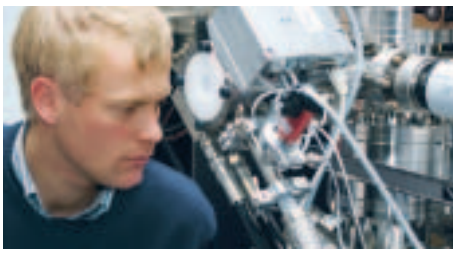
Engineers are more in demand than ever before
18th student show Leoben



Finding the next generation, assisting and encouraging them: ThyssenKrupp Steel Europe seeks to contact students at the earliest possible stage, and in many different ways. Such as at the 18th International Student Metallurgy Show held at the Leoben Mining University, Austria, in mid-March.

This was already the fourth time Leoben has hosted this international student show, which has been held at Europe's leading metallurgy universities in rotation every year since 1993. This is where the potential high-flyers of tomorrow meet and interact – a good reason for ThyssenKrupp Steel Europe to be present and get talking to the next generation early on. The show attracted many students from many countries in mid-March. They used this opportunity to find out about career prospects. ThyssenKrupp Steel Europe's appearance attracted a great deal of interest. The Duisburg steelmaker presented a range of disciplines, like metallurgy, materials science, research and development and mechanical engineering, offering the next generation of scientists interesting starting positions. Students could speak directly with board members, directors and experts from ThyssenKrupp Steel Europe.

They were able to find out about entry opportunities, careers and internships at first hand, so to speak. For many, their first view of the steel company was so positive that they took the next step right there and then: "Awarding internships is a matter of course for us," explains Dr. Rudolf Carl Meiler, Head of Recruiting and Personnel Development at ThyssenKrupp Steel Europe. "We award a number of places at events like this." And that's not all, either: "We promote our next generation consistently," he stresses. "Numerous students have taken their first steps towards major developments with us." There are also opportunities to earn money as student workers in the holidays and gather important experience at the same time. Last but not least, we also support final thesis work of all kinds. And anyone who gets their doctorate can expect to find open doors at ThyssenKrupp Steel Europe. Labor director Dieter Kroll stresses, "Steel is an incredibly exciting field to work in, with excellent opportunities – in research, development, production or even environmental protection. After all, this material is still the basis of innumerable products and applications. Steel will always be going new ways and needing new ideas. Which is why we look to the next generation." One of the high points of the day came from the students themselves. Students from TU Freiberg presented a true lightweight and put their own racing car on the stage. They call the chassis RT05, and they designed, constructed and built it themselves. Lead sponsor ThyssenKrupp Steel Europe supplied an ultra-light outer skin of magnesium sheet via our Freiberg subsidiary MgF Magnesium Flachprodukte.

As well as encouragement, we also use motivational methods to make people realize learning and achieving is fun. "With student shows like Leoben and practical projects, we get students interested in our company and ultimately recruit good next-generation talents," Kroll concludes.

Wolfgang Kessler, freelance journalist

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Germany as an industrial center

"ThyssenKrupp Steel Europe is making a good contribution"

Personal information

Raimund Becker has been a member of the Executive Board of the Federal Employment Agency since 2004. The married family man studied law at Saarland University in the 1980s and completed complementary studies at the Europa-Institute during his practical legal training. In 1988, he joined the Regional Employment Office Rhineland-Palatinate-Saarland as a higher service junior employee and performed several roles there. Eight years ago, the native of Neunkirchen (Saar) joined the head office of the Federal Employment Agency as a department director. Since 2004, the 52-year-old has been working in the Human Resources Department of the Federal Employment Agency.

Germany needs skilled workers, because the German labor market is changing: Whereas the past few decades have been shaped by structural change and high unemployment, the demand for labor is currently booming. Many players are already complaining about a shortage of skilled workers. The subject is being discussed a great deal, opinions vary widely. The fact is that shortages can already be felt in some regions and industries. This can be seen regionally in the ratio between applicants and vacancies or in the time that job openings remain vacant. What is certain is that the shortages will get worse, particularly because of demographic developments. Action should be taken early on to counter a shortage of skilled workers across the board, not only for Germany as an industrial center, but also for the entire labor market. What exactly can we do? There is a great deal of potential in our country which, for various reasons, is not available to the labor market or which is only available to a limited extent. We have to exploit this potential. Since this will not suffice in the long term, we should at the same time think about controlled immigration of skilled workers. In the brochure "Perspective 2025", we have outlined this dual strategy and identified the key levers which we could use to counter an impending shortage of skilled workers, for example:

- reduce the number of school leavers with no qualifications
- reduce the number of people dropping out of training courses
- reduce the number of university dropouts
- increase the labor force participation of people aged 55 or more
- increase the labor force participation of women
- controlled immigration of skilled workers from abroad
- promote qualifications and further training

The multitude and diversity of the spheres of activity clearly show that the shortage of skilled workers can be combated all the more effectively the broader the approach taken and the greater the participation of all of the parties involved. Companies have a central role to play in this. ThyssenKrupp Steel Europe is one example of the way many employers are already accepting this role and have become proactive. Participation in the International Students Day of Metallurgy at the University of Leoben is just one sign of this. When employers have an opportunity to talk to prospective professionals as early as possible and gain their loyalty by means of internships, this can have a positive effect on our labor market.

After all, engineering positions within a company often bring with them further jobs such as, for example, office workers – regardless of where the engineer comes from. When looking for skilled workers it is therefore important to not only look within our country's borders but also beyond them. We welcome every activity by employers which supports and encourages prospective skilled workers from home and abroad and which makes them loyal to German companies at an early stage. With its commitment to this process, employers such as ThyssenKrupp Steel Europe are making an excellent contribution to securing skilled workers. Because Germany needs skilled workers.

New materials to drive the future
Steel quality influencing electric mobility

When people talk about electric mobility and its technical requirements, it is mostly about batteries: How heavy will the energy storage devices of future electric cars be? How much will they cost? And above all: What range will they offer?

The quality of the steel which makes up the core components of electric motors has scarcely played a part in public debate to date. Yet this quality has a major influence on the efficiency, costs and distribution of future drives. ThyssenKrupp Electrical Steel has therefore developed special materials for automotive electric motors.

"Our new material is attracting a great deal of interest from our customers," says Marco Tietz from Applications Engineering at ThyssenKrupp Electrical Steel. "It is already being used in the construction of larger prototype series for future hybrid and electric cars." ThyssenKrupp Electrical Steel is one of the world's leading manufacturers of electrical steel. As non grain oriented electrical steel, the material combines the magnetic flux in electrical machinery such as industrial motors, household appliances, railway drives or wind turbines.

Non grain oriented electrical steel from ThyssenKrupp Electrical Steel gets energy on the roads as efficiently as possible. To this end, the company has developed iron cores which are characterized amongst other things by minimum core losses. At the same time, high strength is also important.

"However, our material has to be able to do significantly more when it is used in automobile engines than in conventional applications," says Tietz. The reason is the high engine speeds of automotive hybrid and electrical drives: While highly efficient electric motors for industrial applications work at a maximum speed of 5,000–8,000 revolutions per minute, the engine speeds of all-electric car engines can be up to four times higher. "In order to get this energy on the roads as efficiently as possible, iron cores need various things including minimum core losses. At the same time, high strength is also important," he continues. "Core losses lead to a resistance in the machine, which means that some of the electrical energy is not converted into motion, but is released as heat. This depends on several factors including the frequency with which the orientation of the magnetic field in the iron core changes, and in car engines which revolve at very high speeds this frequency is particularly high."

ThyssenKrupp Electrical Steel has accepted the challenge and developed materials with core losses almost 30 percent lower than those of the standard grades. This means that less electrical energy is lost as heat and the efficiency of the system increases accordingly. At the same time, the new materials have good thermal conductivity, so that the heat generated during operation can flow away quickly. Electrical steel specialist Tietz comments: "In the case of the new materials, we are focusing on an advanced alloy design and a tailored processing method with additional annealing." ThyssenKrupp Steel Europe's basic oxygen furnace 1 in Duisburg, which creates a high-purity starting product for the production of electrical steel, is also playing an important part in this.

Electric mobility is a market with a future for ThyssenKrupp Electrical Steel: studies assume that up to three million electric cars will be on the roads of the European Union in 2020. This is in addition to some four million vehicles with hybrid drives. Approximately 40 to 100 kilograms of electrical steel are needed per engine for all-electric drives. Hybrid drives will also have a major effect with around 10 to 30 kilograms each. This means sales of 150,000–300,000 metric tons per year for electrical steel manufacturers.

Bernd Overmaat

www.tkes.com

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InCar® in production
Program fully on course

InCar® combines the entire automotive know-how of the ThyssenKrupp Group: engineers have developed more than 30 innovations for the body, powertrain and chassis.

Systematic, customer-focused research and development pays dividends. This is demonstrated by InCar®, ThyssenKrupp's initiative for innovations in automobile manufacture. The first production orders have already been placed. At the same time, almost 100 joint projects are underway with customers at home and abroad involving further innovations in future car ranges. With InCar®, automobile manufacturers can reduce weight and costs or improve the performance of their vehicles. The contribution to climate protection is impressive: a total of up to 5,500 kilograms of carbon dioxide (CO_2) can be saved over the life of each car.

InCar® in production: For example, one German automobile manufacturer will be using tailored tempering B-pillars in its compact class. B-pillars are safety-relevant components that help protect occupants in the event of a crash. The tailored tempering technology patented by ThyssenKrupp Steel Europe saves weight and costs without, of course, compromising safety. In the InCar® project ThyssenKrupp engineers produced pillars which were up to 22 percent lighter and up to twelve percent cheaper than today's standard components with the new process. CO_2 savings: up to 17 percent.

ThyssenKrupp's entire automotive know-how is feeding into the project. Twelve Group companies have, together, developed more than 30 new solutions for the body, powertrain and chassis – including ThyssenKrupp Presta Camshafts from the Components Technology business area of ThyssenKrupp, whose innovative camshaft module is also going into production. Here, too, weight and cost advantages and higher performance have convinced customers. The module presented in InCar® is one kilo lighter and costs ten euros less than a comparable production solution. The CO_2 emissions are reduced by around ten percent. A production order for weight-optimized coil springs has also been placed with the Component Technology business area. ThyssenKrupp's Plant Technology business area has received further orders in the fields of plant and tool engineering.

It usually takes about five years of development work before a new automobile series hits the road. The fact that the first innovations from the project, which was completed at the end of 2009, are already finding their way into production proves that InCar® is hitting the mark. The many projects which are now being handled together with customers confirm their lasting success. Decisions are being made here as to what the cars of the future will look like, and the engineers are involved in the development work at an early stage.

A whole host of new models with innovative lightweight steels from ThyssenKrupp Steel Europe from the InCar® project could be on the road in a few years. Examples are the TPN® steels developed together with the Japanese steel producer JFE, which offer excellent formability and high strength. Also, a newly developed, extremely lightweight sandwich material made of steel and plastic is generating a huge amount of interest among customers. A roof made of a stiffness-optimized material developed within the framework of the project is 38 percent lighter than the reference, and saves 31 percent CO_2 emissions.

For project manager Oliver Hoffmann from ThyssenKrupp Steel Europe, the high degree of maturity of the innovations is the secret of InCar®'s success: "In manufacturing terms and commercially, our solutions have been tested to such an extent that they can be transferred into production with relatively little time and expense."

Bernd Overmaat

http://incar.thyssenkrupp.com

Top Mature: InCar® innovations are comprehensively validated so that they can be quickly translated into volume production.

Bottom On site: At the roadshows high-ranking developers and buyers from automotive companies evaluate the new solutions from the InCar® project.

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Recipe for success: technical collaboration
"We support our customers from A to Z"

"We don't just sell steel, our customers expect customized products – suitable for the challenges of modern lightweight body construction," stresses Dr. Heinz Hempowitz, Head of Product and Project Coordination in ThyssenKrupp Steel Europe's Auto Sales unit.

"As an expert partner for steel in cars, we design innovations jointly with our customers from the outset. We assist with all sales and technical activities related to our flat steels and surfaces, ranging from the initial market analyses and product development to the subsequent market launch and production supply." This is an all-embracing task for the Product and Project Coordination team, including addressing the complex development process of the carmakers. "It takes around four to six years from the concept phase through the various development stages of a vehicle up to the start of mass production," explains Hempowitz. "During all of that time our customers can always count on the support of our project engineers." In addition, within the framework of production, experienced customer advisors are entrusted with quality assurance in the press shops. "They are always there when there is a snag in the press shop or improvements have to be made." Hempowitz says, with conviction: "The intensive technical collaboration is valuable for both parties. The automobile manufacturer can rely on competent partners at Auto Sales during the entire development and production phase of their vehicles. Due to our close involvement we are able to tailor the characteristics of our products perfectly to customers' requirements and do not develop products the market doesn't need."

Ralf Sünkel, who is responsible for customer projects in Product and Project Coordination, goes into detail: "We take account of the potential of our modern steels and introduce them into the development of the vehicles at an early stage." The basis for this is close cooperation with the customer's developers and purchasers. "Even in the early stages our project engineers provide advice on materials, surfaces as well as processed products and tailor the concepts in the best possible way to the customer's needs. During the subsequent construction phase, we can also actively support customers by means of intensive simultaneous engineering." For this, Sünkel's team not only provides characteristic values regarding ThyssenKrupp Steel Europe's materials, "Together with our colleagues from Applications Engineering we also design body components, carry out forming and crash simulations, validate joining and forming operations and advise on the material-specific design of components." The same tools are used for this as are used by customers. "This creates confidence in the methodology and approach. The exchange of information also works well."

The transition to production operations offers further points of contact for the cooperation. As Sünkel says: "The start of production is particularly tricky. The automobile manufacturer cannot afford any technical problems and delays during this phase. Therefore, our specialists do everything to ensure a smooth start and are immediately on hand in the event of problems."

This is also the case when production is in full swing. "Customers can rely on us throughout the process. This can also include a so-called running change in production, if a better or more economical production method than the previous one becomes available." With the technical cooperation, Auto Sales is pursuing an approach which has long borne fruit for the company: During the last few decades ThyssenKrupp Steel Europe has developed a whole host of products and processes which are now state of the art. These include the first fully galvanized body for Porsche and the world's first tailored blank for the floor panel of the Audi 100.

The Product and Project Coordination unit of Sales Auto cooperates closely and intensively on technical matters with its customers from the automotive industry. That is guaranteed by (from left) Dr. Heinz Hempowitz and Ralf Sünkel.

In the 1980s the high-strength and ultra-high-strength steels contributed to steel's success story in cars, then it was the turn of the advanced high-strength steels. It is difficult to imagine any vehicle without multiphase steel since the mid-90s. Products and technologies for hot stamping such as the first hotform blank in the Audi A5 or tailored tempering now complement the portfolio of ThyssenKrupp Steel Europe. The technology platform InCar®, which was presented in 2010 with customized modular solutions for weight, cost and emissions reduction of future generations of vehicles, is the result of intensively studying customers' technical problems. The ability to innovate, customer service and an understanding of OEM and supplier processes remain the key factors for ThyssenKrupp Steel Europe's success. And customers realize that. "We are perceived as a competent partner by our automotive customers," says Hempowitz delightedly. "And to ensure that it stays that way we will work with our customers even more intensively in future in order to optimize our range of products and services."

Christiane Hoch-Baumann

Contact: **Dr. Heinz Hempowitz,** Auto Sales, Tel: +49 203 52-44930, e-mail: heinz.hempowitz@thyssenkrupp.com

Agenda

JSAE
May 18 – 20, 2011, Yokohama, Japan
The JSAE Automotive Engineering Exposition is the annual exhibition organized by the Japanese Society of Automotive Engineers (JSAE) and the largest Japanese technology exhibition for engineers and developers from the automotive industry. 2011 marks the 20th anniversary of the event. 400 exhibitors on a total exhibition area of approximately 20,000 square meters will be awaiting almost 70,000 visitors. ThyssenKrupp Technologies Japan will be attending the exhibition and presenting automotive steel solutions from the ThyssenKrupp Group.

Coilwinding 2011
May 24 – 26, 2011, Berlin
The CWIEME (International Coil Winding, Insulation and Electrical Manufacturing Exhibition and Conference) is the world's largest exhibition for coil winding, insulation and electrical manufacturers. In addition to the products of ThyssenKrupp Magnettechnik, ThyssenKrupp Electrical Steel will be presenting its innovations regarding PowerCore® branded grain oriented and non grain oriented electrical steel in the German capital for the ninth time. The exhibition attracts an international audience (Hall 2.2, Booth 3323).

IDDRG 2011
June 5 – 8, 2011, Bilbao, Spain
Lecture on "Tailored Tempering – New Process Technology for Hot Stamped Parts" given by Dr. Franz-Josef Lenze, R&D Forming, ThyssenKrupp Steel Europe.

SCT – Int. Conference on Steels in Cars and Trucks
June 5 – 9, 2011, Salzburg, Austria
The International Conference SCT (Steels, Cars and Trucks) will be taking place in Salzburg for the third time (previously held in 2004 and 2007). The motto is "Bringing the automotive, supplier and steel industries together". Against the backdrop of numerous technical lectures accompanied by an exhibition, experts from the international steel, automotive and supplier industries use this event as an opportunity to exchange information and network. ThyssenKrupp Steel Europe will be attending with the InCar® truck and giving various talks on the subject of steel, taken from a wide range of technical fields.

Blechexpo
June 6 – 9, 2011, Stuttgart
Blechexpo will only be taking place in the month of June in 2011. In the future, the exhibition will be organized in rotation with Euroblech in Hanover, which always takes place in the fall of each year. After Euroblech, Blechexpo is considered to be the most important trade fair for sheet metal working. In addition to ThyssenKrupp Steel Europe and ThyssenKrupp Materials International, ThyssenKrupp Nirosta, ThyssenKrupp Stahl-Service-Center, ThyssenKrupp Schulte and Hoesch Hohenlimburg will be represented in Stuttgart. Under the exhibition motto "Single-source solutions for a wide range of industries", ThyssenKrupp Steel Europe will be displaying its extensive product portfolio for an extremely wide range of high-quality applications in the capital and consumer goods sectors (Hall 4, Booth 4105).

Int. Conference on Hot Sheet Metal Forming of High-Performance Steel
July 13 – 16, 2011, Kassel
The "3rd International Conference on Hot Sheet Metal Forming of High-Performance Steel" will be taking place in Kassel from July 13 to 16. ThyssenKrupp Steel Europe will be represented and will be presenting, among other things, a talk on the subject of tailored tempering.

Alihankinta
September 13 – 15, 2011, Tampere, Finland
On an area of roughly 13,500 square meters and with around 900 exhibitors, the international trade fair brings together the leading companies in the supplier industry in the Tampere Exhibition and Sports Center. Finland's largest industrial trade fair offers participants an opportunity to develop and extend effective networks with new and old business partners. A large number of participants visit this exhibition from Scandinavia and Russia in particular. ThyssenKrupp Steel Europe will be represented, with the Heavy Plate Unit, at the booth of the company's trading partner of many years, Flinkenberg (Hall C, Booth 502).

Echo

ThyssenKrupp saving millions – including CO_2
ThyssenKrupp Steel Europe launched a new energy efficiency program in 2010, which will sustainably reduce the energy costs at all of the locations of the production network. The results of the economy measures are impressive, because the potential identified to date at just the Siegerland, Bochum and Dortmund sites is approximately 12.5 million euros, thus guaranteeing a calculated 78,000 metric tons less CO_2 emissions by the end of the implementation phase in 2014 (...).

WAZ (Duisburg), March 5, 2011

450 metric tons less particulate matter a year
ThyssenKrupp Steel Europe has undertaken another investment worth several millions, which will significantly reduce particulate emissions at the Duisburg site. The company is building an additional filter for removing dust from the sinter plant. (...) The investment will reduce the environmental burden by 450 metric tons of particulate matter a year (...).

Bänder Bleche Rohre Online Portal
[Strip Plate Pipes Online Portal], February 3, 2011

Tubular sections from the deep-drawing press
ThyssenKrupp Steel Europe AG has now developed its 'T³ technology' to such an extent that tailored tubes can be manufactured on conventional deep drawing presses. Depending on the application these result in weight savings of more than 25 percent.

Industrieanzeiger, 04/2011